

Appln No. 10/813,042
Reply to the Office Action dated December 28, 2004

REMARKS

Claims 1-21 are active in the present application. Reconsideration is respectfully requested.

Applicants' representative wishes to thank Examiner Boykin for the helpful and courteous discussion of February 14, 2005. As a result of the discussion it is believed that the issues in the case have been clarified and that the prosecution of the application has been materially advanced.

The present invention relates to a branched aromatic polycarbonate .

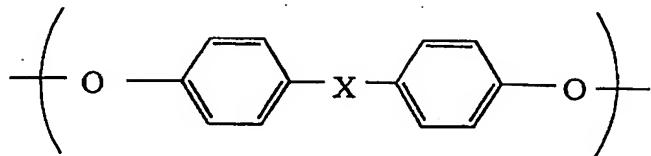
Claim Amendments

Claims 1-3, 5, 6 and 8-14 have been amended in order to improve upon the grammar/syntax of the claims. None of the amendments are believed to have changed the scope of the claims or to have introduced new matter therein. Entry of the amendments into the record is respectfully requested.

Invention

The present invention is directed to an aromatic polycarbonate having a viscosity-average molecular weight of 16,000 or higher that is obtained by the transesterification method, wherein the ratio of the weight-average molecular weight (Mw) to number-average molecular weight (Mn) as measured by gel permeation chromatography and calculated for standard polystyrene (Mw/Mn) of the aromatic polycarbonate is in the range of 2.8 to 4.5 and wherein the proportion of the number of moles of all branched structural units to

1 mol of structural units represented by formula (1) is higher than 0.3 mol % and not higher than 0.95 mol %:



wherein X is a member selected from the group consisting of a single bond, an alkylene group having 1 to 8 carbon atoms, an alkylidene group having 2 to 8 carbon atoms, a cycloalkylene group having 5 to 15 carbon atoms, a cycloalkylidene group having 5 to 15 carbon atoms and a bivalent group selected from the group consisting of -O-, -S-, -CO-, -SO- and -SO₂-.

The branched aromatic polycarbonate of the present invention exhibits a combination of favorable properties of a satisfactory color tone while retaining intact melt characteristics. The present invention achieves these desired characteristics in a branched aromatic polycarbonate having a molecular weight distribution within a specific range and which contains a specific amount of main chain structural units.

Double Patenting Rejection

Claims 1-21 stand rejected based on the judicially created doctrine of obviousness-type double patenting over Claims 1-49 of copending application Serial No. 10/633,672. This ground of rejection is respectfully traversed.

It is clear that the claims of the copending application are directed to the same field of technology of the present invention in that the claims of the application are directed to a

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branched aromatic polycarbonate produced by *transesterification*. However, there are several distinctions between the claimed aromatic polycarbonate of the present invention and that of the patent, not the least of which is that the present polycarbonate must be characterized by a weight average molecular weight ratio that ranges from 2.8 to 4.5, while no such limitation appears in the claims of the copending application.

Another distinction between the claimed aromatic polycarbonate of the present invention and that of the patent is that the polycarbonate of the claims of the copending case must have a viscosity average molecular weight of at least 16,000, while no such limitation appears in the present claims.

Still further, the stated matter of identifying the amount of branched structures in the polycarbonates of the copending application versus the manner in which branching is indicated in the copending application is completely different. That is, the copending application states that claimed polycarbonate must contain a main chain in a specific amount of 2000 to 50000 wt ppm of the specific branched structure of formula (1) and specific amounts ranging from 30 to 10,000 wt ppm of the specific branched structures of formulas (2) and (3). Still further, the main chain structure must also contain structural units of formulas (4) and (5) each in an amount of 10 to 10,000 wt ppm. On the other hand, in the present invention, the present claims require that the proportion of the total number of moles of all branched units in the polymer, based on one mole of units of formula (1) in the claims, must range from > 0.3 mol % to ≤ 0.95 mol %. Again, there is absolutely no teaching or suggestion of such a limitation in the claims of the copending application. It, therefore, is not apparent how one of skill in the art, following the teachings of the claims of the copending application, could possibly arrive at the present polycarbonate as claimed. Accordingly, the invention as presently claimed is clearly unobvious

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in view of the language and invention description in the claims of the copending application.

Withdrawal of the rejection is respectfully requested.

Prior Art Rejection, 35 USC 102

Claim 3 stands rejected based on 35 USC 102(b) as anticipated by Mestanza et al, U. S. Patent 5,948,876 or Tojo et al, U. S. Patent 6,262,210. This ground of rejection is respectfully traversed.

The Mestanza et al patent is relevant to the present invention, because it discloses aromatic polycarbonate resins where structural branching in the main chain of the polymer is of importance. However, the method by which a branched polycarbonate product of the patent is prepared is completely different from the method by which the product of the present invention is prepared. In the patent a linear polycarbonate is **prepared by interfacial polymerization** which is the reaction of phosgene with a dihydric phenol. This linear polycarbonate is then combined with a branched polycarbonate that is typically a novolak resin or a bisphenol polymer (see abstract; col 5) and the combination is heated in order to effect a carbonate equilibrium reaction which results in a product containing branched polycarbonate. In Examples 2-4 a linear bisphenol A polycarbonate resin and a branched phenolic resin (ALNOVOL PN 320) are heated in the presence of catalyst and branched product is obtained.

Applicants submit that it is clear that the process disclosed is *not* the transesterification method of the invention by which the present aromatic polycarbonate is prepared. That is, as clearly set forth in the present specification, the transesterification method is accomplished by reacting a simple carbonic diester with an aromatic dihydroxy compound. The result of the method is the aromatic polycarbonate product of this invention that is characterized by

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branching in the manner described in the present claims. In fact, there may have been some confusion on the part of the Examiner in not noting that the process of the patent is interfacial polymerization and not transesterification as required by the present claims. Accordingly, not only does the reference not anticipate the present invention in any of its embodiments, it does not obviate the invention as claimed. Withdrawal of the rejection is respectfully requested.

As to the Tojo et al patent, the same is clearly of secondary interest because the product material taught by the reference is an aromatic carbonate product, not an aromatic polycarbonate (see, for instance, column 63, lines 64-67). That is, the product of the reference is prepared by reacting a dialkyl carbonate, an alkyl aryl carbonate or a mixture thereof with an aromatic monohydroxy compound or an alkyl aryl carbonate or a mixture thereof. The result of this reaction is aromatic carbonate compound that contains some branched structures in the aryl portion of the carbonate. Clearly, the patent does not suggest the present invention as claimed and withdrawal of the rejection is respectfully requested.

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It is now believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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